

# Linear Graphs Using Proportions and Rates

## Summary

Graph proportional relationships. Identify the unit rate as the slope of the related line

## Main Core Tie

Mathematics Grade 6

[Strand: RATIOS AND PROPORTIONAL RELATIONSHIPS \(6.RP\) Standard 6.RP.3](#)

## Materials

TI-73 calculators

Worksheets: [Graphing Proportions on the TI-73](#), [Proportional Measures for Circles](#), [Rate of Change As Slope](#)

Smart Pals and markers

## Background for Teachers

Enduring Understanding (Big Ideas):

Linear graphs

Essential Questions:

What does the graph of a proportional relation look like?

In proportional relationships, how does the unit rate compare to the slope of the related line?

Skill Focus:

Recognize rate as the slope of a proportional graph

Vocabulary Focus:

Proportion, rate, slope

Ways to Gain/Maintain Attention (Primacy):

technology, sketching, group discussion, summarizing

## Instructional Procedures

Starter:

Tell whether each pair of ratios forms a proportion

$\frac{1}{3}$ ,  $\frac{6}{9}$

$\frac{2}{5}$ ,  $\frac{8}{20}$

$\frac{0.5}{2}$ ,  $\frac{2}{8}$

Complete the sentence: If two ratios form a proportion, they are \_\_\_\_\_ ratios.  
(equivalent)

Write three ratios which are equivalent to  $\frac{3}{5}$ .

Find the unit rate for each. (How many per...)

Gorge drove 210 miles in 3 hours.

600 students can be seated in the auditorium in 20 minutes.

Jaime makes \$120 in 8 hours.

A 20 oz box of cereal is \$2.40.

Lesson Segment 1: What does the graph of a proportional relation look like?

Use Timed Pair Share for each question of the attached Graphing Proportional Relationships investigation worksheet. In Timed Pair Share, one partner is the explainer telling the other what should be done during a given time limit. If both partners agree, they write that response on their worksheet. For the next problem, the other partner becomes the explainer, telling what should be done. For each problem on the worksheet, set the timer so the partners know when the explaining

time is over. Have several students share what was done after each problem is completed.

Have students complete the Proportional Measures For Circles using the TI-73.

Q. Why do these proportional relationships form a linear graph?

Lesson Segment 2: In proportional relationships, how does the unit rate compare to the slope of the related line?

As a class complete # 1-4 on the Slope as Rate of Change worksheet. Ask students to work in pairs to complete # 5. Student pairs should show their work on a Smart Pal. Select a few pairs to show the class what they did by placing their Smart Pal on the overhead projector.

Team Statement:

Ask teams to discuss item # 6 on the worksheet and come up with a team statement about their reasoning. The scribe should read the statement to the class. Discuss each team's statement.

Exit Card: Have each student explain in their own words why the rate of change for data is the slope of the graph of that data.

### Assessment Plan

performance, observation, questioning

### Bibliography

This lesson plan was created by Linda Bolin.

### Authors

[Utah LessonPlans](#)